THE IMPACT OF KEY USER ENGAGEMENT AND ERP APPLICATION TO END USER SATISFACTION WITH SOFTWARE UPGRADE AS THE MODERATING

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ABSTRACT: *Many companies implement Enterprise Resources Planning (ERP) to reap the benefits of increasing the company's value. The ERP implementation should be upgraded along with the changes in the business operation of the company. The changes in operation are monitored and controlled by top management. Meanwhile, the company develops continuously ERP through key users. The top management has to attract the key users to engage in the process so that the key users can customize the system. The key user engagement brings direct impacts to the ERP application and end-user satisfaction. The ERP application set by the key users can bring a positive impact to end-user satisfaction. The ERP development can be achieved by upgrading the ERP software so that the ERP can increase the impact of the key user engagement to end-user satisfaction. However, the software upgrades to the ERP application bring a negative impact on end-user satisfaction. This is caused by the end user's extra efforts to produce better-integrated data among management functions after the software upgrades. The end users have to comprehend and relearn the newly upgraded software, in order to fulfill the needs of the integration, coordination, and collaboration among different functions, which add extra job responsibility to the end-users.*

Keywords: Key User Engagement, ERP Application, End-User Satisfaction, Software Upgrade

1. INTRODUCTION

Enterprise resource planning (ERP) is a data integration within a company to increase its performance. The rapid development of technology enforces the top management to implement information technology for the company. Therefore, many companies have implemented ERP and monitor the ERP functions consistently after post-implementation to obtain optimal results. The companies gain benefits from the ERP implementation, among others are having good cooperation among different management functions, reducing the production inventory, easier controlling administrative system, reducing lead time in material purchasing, utilizing the production materials according to planning, forecasting more accurate demand, giving satisfaction to end-users, and creating customer satisfaction. The ERP system can surrender these benefits if the system is aligning with the company's operational systems and the personnel (key users and end-users). Sometimes, vendors are called for help to adjust the complexity of ERP implementation, especially during the long adjusting time and competent skill upgrades.

The top management assigns the key users to manage the success of ERP implementation by considering the business scope, deciding the data interfaces among departments within the company, deciding the business process blueprints among the management functions, and dividing tasks for end-users. The key users provide adequate training to the end-users on how to understand and improve the knowledge about the ERP system. The key users need inputs from the end-users so that the key users can provide data, information, and software applications suitable for the end-user functional needs [1]. Although vendors have customized the operational systems of the companies, many companies still build on additional programs to match the ERP package with organizational needs. This condition often enforces many companies to add suitable programs outside the ERP system through end-user development, end-user programming, and end-user software engineering [2]. With support from the top management, the key users try to implement and develop ERP successfully within the company. These efforts need time to implement and costs to develop. The satisfaction of key users and end-users are very important during the stage of implementation. Research by Costa et al. [3] reveals that the top management support, proper training, and good quality ERP system surrender satisfaction to the key users and the end-users. Post ERP implementation, Key user is responsible for ERP implementation in the company by replacing ERP consultants. Key users have the competency in customizing ERP to fit the needs of the company, make it easier for end-users to use ERP, and get reports from ERP. The competence of key users is enhanced by providing adequate training and learning. This condition is certainly the responsibility of the company's top management by providing adequate funding.

Manufacturing companies in the East Java have been implementing ERP for quite some time. In the last four years, the government of Indonesia has emphasized the tax report for all companies and individuals to be conducted via online. As supported and facilitated by the government, many companies are developing updated ERP software to accommodate the request of the Indonesian government. Besides, there are changes in the company's operating system that are not aligned with the outdated ERP system, so adjustments are needed to update and upgrade the software. These changes bring impacts to the key users in customizing and satisfying the end-users.

2. GRAND THEORY

Implementing ERP in a company needs a top management commitment by empowering the head of the company department, which is called key users. The responsibility and performance of key users are aligning the ERP system to the operating system of the company. The key users work with vendors in updating ERP software. The key users share knowledge and experiences to end-users to make ERP usable, as the result, the performance of a company is improving.

A. Key User Engagement

Top management needs to pay attention to key user engagement because it is the success key of ERP in a company. The top management embraces the key users in determining the business strategy alignment with the ERP implementation strategy. The key users are the most responsible individual in the success of ERP after disconnected from the vendor. The key users are responsible for matching the ERP system with the operation. The key users redesign business processes with a suitable ERP system to the company's needs and make it easier for the end-users to use [4]. They also redesign organizational structures for each department in accordance with their need, and continuously communicate and train the end-users. The key users as the members of an organization always have a role in building the ERP system, by getting involved physically, cognitively, and emotionally as long as the ERP is still in the system of a company. Their active involvement gives positive impacts for the performance and profit of the company [5]. Indicators used for the key user engagement are customizing ERP to align the business operation, the clear responsibility, and the support from top management and vendor.

B. Application ERP

ERP application is a package given by the vendor to the company. The ERP service provider does not always deliver suitable applications matching the company's standard, so it needs to be adjusted to give the best practice. The ERP application does not give lots of benefits to a company if the strategy of the information technology development is not aligned with the business strategy [6]. The ERP application can be utilized if it is integrated well among departments, and it is declared 'going live' after integrating internal business functions, integrating data and users, integrating horizontally between functions, integrating data entirely, and integrating all company functions [7]. The ERP system can support all functions in an organization, and its application can also increase automation in a company and give improvements in the business service system [8]. Corno *et al.*, [1] state that the end users want an application to do data entry and data coding automatically instead of manually. The indicators used to measure the ERP application are data integration, function integration in a company, compatibility of ERP application, and suitability of ERP application to the company's need.

C. End-user Satisfaction

End users are the employees of the company who use the ERP functions. They are doing the data entry, filling forms, and reporting the data to the top management using the ERP system. The satisfaction in using information technology is reflected by the ability of the ERP application in providing integrated data, accuracy data, on time and reliable data [9]. Drummond et al., [4] state that end users have some important needs, such as real-time data, well-integrated data to prevent the gap, clear organizational structure to know the work scope, continuous training, and ERP infrastructure. Larsen [10] states that end user's satisfaction consists of the need for information content, data accuracy, usable data format, ease of use system, and data timelines. The indicators that are used to measure key user satisfaction are good data accuracy, information content as needed, ease of use system, data timeliness, and continuous training.

D. Software Upgrade

ERP implementation in a company has some steps to make ERP as the operational business system. One thing that key users doing is analyzing the operational system to give insight into the ERP software company [12]. The ERP package used in a company is the best practice received, monitored, and controlled through usable software. It gives integrated data, accurate data, gap analysis, availability reports needed by the stakeholder, document approval, and communication forum [11]. The ERP software in a company creates efficiency and effectiveness for the company, especially in reducing inventory, production process, sales and distribution, and accounting. ERP software is also able to help the top management to make the right decision based on data availability [13]. Therefore. the ERP Software should always be updated in corresponding to the modules in the ERP system, ERP database, codes in the ERP system, reports as needed by the user, and interface between functions in ERP [6]. The indicators used for software upgrades are reliable reports, suitable ERP modules, suitable databases, and software as needed.

E. ERP The Relationship Between Concept Development

ERP application is a package given by the vendor to the company. The ERP service provider does not always deliver suitable applications matching the company's standard, so it needs to be adjusted to give the best practice. The ERP application does not give lots of benefits to The usage of suitable ERP in a company will give a positive impact to increase the company's performance [14]. The ERP system development depends on employee empowerment given from the top management. As a result, key user empowerment gives an impact on stakeholder's satisfaction [15]. The ERP system quality also gives a positive impact on user's satisfaction, because they will use data from the output system. The system is easy to use and the data are as what the users need: reliable, flexible in accessing, good quality data accessibility, and integration [3]. The company's software is able to give what the end-users need to increase their satisfaction as the client from an ERP provider. The adjusted or upgraded software within a certain period of time are able to adjust the end user's need as a client of a company [16].
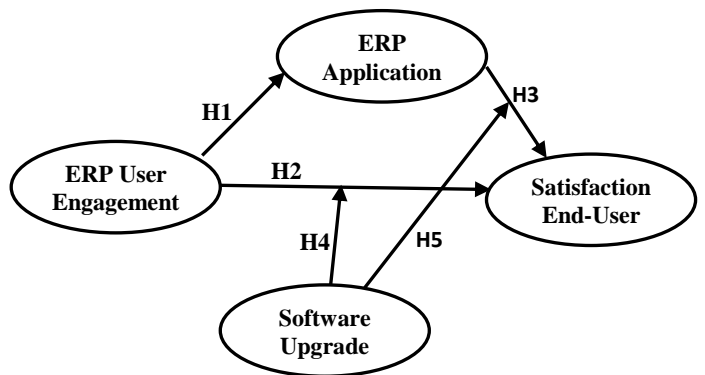
Fig (1) The research Models

The ERP software that can give reports of business performance function gives efficiency and effectivity and helps in making the decision for the company's strategy in giving satisfaction to the end-user [13]. Based on the explanations above, the research framework can be depicted in Figure 1.

Based on Figure 1, the hypothesis can be constructed as follows:

H1: Key user engagement brings impacts on ERP applications.

H2: Key user engagement brings impacts on key user satisfaction.

H3: ERP application brings impacts to key user satisfaction.

H4: Upgraded ERP software acts as a moderating variable from key user engagement to end-user satisfaction.

H5: Upgraded ERP software acts as a moderating variable from ERP application to end-user satisfaction.

3.   RESEARCH METHOD

The respondents of this research are the key users and the end-users from various departments in the company. The researchers and with the help of enumerators distributed questionnaires to key users or end-users in some selected companies. Those companies that are appointed to become the samples must have implemented ERP for more than 5 years, and they have upgraded the software to support the ERP system. The questionnaires are distributed to 72 companies. The returned questionnaires are 64 questionnaires, with six incomplete questionnaires, so the response rate of this research is 81%. from 64 companies, but 6 of them are not filled completely, so the response rate of this research is 81%. All data can be further processed, and there are 41 respondents from the key users and 17 respondents from the end-users. The data are collected using the Likert scale, ranging from strongly disagree (1) to strongly agree (5). Data analysis is using smart PLS to answer the research hypothesis.

As the first variable, key user engagement Cronbach's alpha is 0.732, and the validity value is described by the outer loading, as the measuring indicator obtained through customizing ERP to align business operation (KU1), with the value of 0.760, clear responsibility (KU2) of 0.671, top management support (KU3) of 0.876 and vendor support (KU4) of 0.662. The second variable is ERP application Cronbach's alpha of 0.776, with the integrated data outer loading indicator (ERP1) of 0.767, the integrated company functions (ERP 2) of 0,691, and the suitable ERP application (ERP3), and with the ERP application as needed by the organization (ERP4) of 0.749. The Cronbach's alpha for the end-user satisfaction variable is 0.818, and the outer loading for each indicator is of 0.712 for good accuracy data (EUS1), of 0.799 for information content as needed (EUS2), of 0.793 for ease of use system (EUS3), of 0.757 for timelines data (EUS4), and of 0.737 for continuous training (EUS5).

The moderating variables the software upgrade, with Cronbach's alpha of 0.735, and the outer loading for the indicator of the report as needed (SU1) is 0.843, for ERP module as needed (SU2) is 0.811, for the database as needed (SU3) is 0.594, and for software, as needed (SU4) is 0.516. All variables have met the reliability requirement with the

Cronbach's alpha greater than 0.70; all indicators also have met the requirement because their outer loadings are above 0.5 as a result, the data can be proceeded to answer the research hypothesis.

4.   DATA ANALYSIS

Table 1. shows the descriptive results for each variable after the data processes. The respondents' perceptions to key user engagement, ERP application, end-user satisfaction are categorized as good and have been implemented properly, meanwhile the perception to software upgrade is categorized as very good and suitable for the needs.

Table 1.
Descriptive Analysis on Research Variables

Variable/indicator	Mean	Standard Deviation
Key User Engagement	4.1078	
KU1	3.9310	0.7692
KU2	4.2069	0.7436
KU3	4.1034	0.9494
KU4	4.1897	0.6611
ERP Application	4.0310	
ERP1	4.0690	0.7692
ERP2	3.9828	0.9998
ERP3	3.8448	0.9515
ERP4	4.0345	0.7715
End User Satisfaction	4.1595	
EU1	4.2241	0.7020
EU2	4.1034	0.8923
EU3	4.1207	0.9380
EU4	4.1552	0.8945
EU5	4.2586	0.7850
Software Upgrade	4.4483	
SU1	4.5345	0.6273
SU2	4.3103	0.8209
SU3	4.4310	0.6244
SU4	4.5172	0.5995

Based on Table 1, it can be said that the key user engagement has run smoothly in the company. The mean for the key user engagement is 4.1078, which indicates the company already empowered and developed the key users as the responsible team for ERP. the lowest mean is on the indicator of customizing ERP to align the business operation. This shows that many improvements must be undertaken to synchronize the company's business processes with the ERP system.

The mean for ERP application is 4.0310, which indicates the respondents' perception of the ERP application in the company considered as the operational system. The ERP application item that needs improvement is the functional integration in the company and the compatibility of the ERP application. This condition needs function integration improvement among different interrelated functions in the company. The function of ERP indeed needs continuous improvements so that the system can integrate the whole company systems. Each business function has to do the data entry to the ERP system according to the already established rules so all components in the company can retrieve the data through the ERP system. These data can help make proper managerial decisions. Besides, the compatibility of ERP application needs further improvements, too. The ERP application is a complex system and constantly needs customization caused by always changing information

technology and fast-changing businesses so key users need to pay attention continually. The competency of key users determines the suitability of the ERP application and the business process in the company.

Table 2 reveals the direct impact output of key user engagement to end-user satisfaction through ERP application and software upgrade as the moderating variable.

Table 2.: Direct Impact

Direct Impact	Original Sample (O)	T Statistics (|O/STDEV|)	P -Values
ERP Application → End-User Satisfaction	0.372	2.295	0.022
Key User Engagement → End-User Satisfaction	0.361	1.999	0.046
Key User Engagement → ERP Application	0.579	3.143	0.002
Moderating Effect 1 → End-User Satisfaction	0.383	2.187	0.029
Moderating Effect 2 → End-User Satisfaction	-0.428	2.607	0.009

The first hypothesis states that the impact of key user engagement to ERP application is obtained the value of 0.579, with a p-value of 0.002, smaller than the significant value of 0.5, so the hypothesis is accepted. It shows that key user engagement gives impacts to the success of the ERP application. The key user engagement in a company has the support from the top management and the customized ERP to align all operational business that will give influence toward the suitable ERP for the company's needs and the business unit functions. This finding is in line with a study Rothenberger and Drummond et al. [4]. The top management must be able to delegate some clear responsibility and authority to the key users. The clear roles of the key users can do some changes in the ERP system so it can match with the needs of the company. The top management must also communicate routinely with the key users about the ERP progress within the company [17].

The second hypothesis are stating that the influence of key user engagement toward end-user satisfaction is of 0.361, with a p-value of 0.046, smaller than the significant value of 0.05, therefore the hypothesis is accepted. It shows that the key user engagement gives impacts toward end-user satisfaction. The key user engagement with the top management supports is able to give impacts to the increased satisfaction of the end-user through the needed information, content, and the key user empowerment is also able to train the end-user so that the end-user can easily use the ERP system. This research is in line with the study of Larsen [10]. Key users are responsible for ERP in the company, so they will always communicate regularly with the end-users. The key users are the outlet for the end-users to express inconveniences and problems related to the error of the ERP application. The key users must also provide solutions to the end-users in dealing with problems directly. The key users will always conduct knowledge sharing with the end-users in order to be able to overcome the current problems. The competencies of the key users are to provide fast handling of

problems in the company so as to provide satisfaction for the end-user.

The third hypothesis is stating that the impact of ERP application toward end-user satisfaction is obtained as 0.361, with a p-value of 0.046, smaller than the significant value of 0.05, therefore the hypothesis is accepted. It indicates that the key user engagement gives impacts toward end-user satisfaction. The ERP application that integrates various business functions with a suitable ERP system will give impacts to end-user satisfaction. This research is in line with the study of Amoako-Gyampah [9] and Corno et al. [1].

ERP application with the integration of data between functions within the company will provide fast information to end-users while doing their tasks. This condition makes it easier for the key users to complete the job so that it gives satisfaction. The ERP application installed by the company through the key used as the person in charge is always customizing the ERP according to the end user's needs and make a procedure system, such as document system, standard operating procedure, and work instructions [18]. The progress of information technology enables the end-users to access ERP data from various locations through a single database. This condition allows end-users to access and enter data without being limited by time and place.

The fourth hypothesis states that the impact of key user engagement toward end-user satisfaction with a software upgrade as the moderating variable is 0.383, with a p-value of 0.029, smaller than the significant value of 0.05, therefore the hypothesis is accepted. It shows that the increasing key user engagement gives an impact on the increasing end-user satisfaction with the software upgrade as the moderating variable. The key user engagement in customizing the ERP package to align all business processes is by upgrading the ERP software [12]. The upgraded ERP system needs to be maintained to make the report as needed by the end-user and the ERP module as needed by the company and to have impacts toward the increasing key user satisfaction. This research is in accordance with the study of Parthasarathy and Sharma [6] and Huang [19].

The fifth hypothesis states that the impact of ERP application to end-user satisfaction with a software upgrade as the moderating variable is off -0.428, with a p-value of 0.009, smaller than the significant value of 0.05, therefore the hypothesis is accepted. It can be concluded that the ERP application gives a negative impact on end-user satisfaction with software upgrades as the moderating variable. The adjusted ERP application for renewing the ERP application system by upgrading the software requires extra working efforts of the employees so the adjusted new ERP application brings impacts to the discontentment of the end-users. This research is in line with the study of Abdinnour and Saeed [20]. They state that user's perception of software upgrades after post-implementation is not significantly different from the capability, value, and implementation of the ERP system. This research is different from the study of Greasley and Wang [11] who state the adjusted software will give satisfaction to the end-user.

The sustainability of ERP in East Java manufacturing

companies is very dependent on the key users. The role and responsibility of the key users are very crucial for the company's operational system. The key users within the company need to be trained and upgraded so that the ERP application system is more in line with the company's strategy and rapidly changing business [21]. Due to the important role and high expertise of the key users, the existence of the key users can become a threat for the company if they are not maintained properly to stay in the company. Problems will arise if the company does not care for and maintain the key users, so the key users move to another company that provides better facilities and income.

5.   CONCLUSIONS

The key user is the crucial element for the successful implementation and development of ERP systems in manufacturing companies. The key user has an important responsibility to the business process, the standard of operating procedure, work instruction, and function integration in a company. This condition makes the top management understand the important role of key users, so it can be developed and engaged. Key user engagement gives an impact directly toward the increasing development of ERP application. Key user engagement gives a direct impact on end-user satisfaction. The ERP application gives positive impacts directly toward end-user satisfaction because it helps the responsibility and role of the end-users. The company must update the technology to maintain the compatibility of the ERP system with the business operations. The company software upgrades give a new task to the key users. Upgrading the software in fact can improve the key user engagement toward end-user satisfaction. On the other hand, it is different as the company upgrades the software, it gives a negative impact from the ERP application toward end-user satisfaction. This condition is caused by a key user having to learn new things, to do more intensive coordination and collaboration between functions, to give extra time in synchronizing the functions, to slow down reporting processes that are caused by software renewal. Thanks to DRPM and Higher Education Indonesia for providing grant funding this research [T/140/E3/RA.00/2019].

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